# http://www.washingtonexec.com/wp-content/uploads/2011/09/plant-hand-crop-130x94.jpg Using Classification to Investigate Living Organisms

# Information Sheet for Informational or Explanatory Module

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| Module title: | Using Classification to Investigate Living Organisms |
| Module description (overview): | Students will be able to investigate the diversity of living organisms and how they can be compared scientifically. They will recognize the organisms’ characteristics and classify them into specific Domains and Kingdoms based upon the physical characteristics they observe.  Note to Teachers:  This module leads students through investigations of organisms’ organization from basic to complex. Students investigate processes associated with systems that function in: acquisition and utilization of energy e.g. digestion and respiration, and excretion. They examine these processes through a comparative study of the six kingdoms of life which ultimately lead them to the understanding that all living organisms (including humans) are made of cells and all participate in these processes in order to maintain life. |
| Template task (include number, type, level): | Template Task 11 Informational or Explanatory/Definition L1: After researching\_\_\_\_\_\_\_\_ (informational texts) on \_\_­­­\_\_\_\_\_\_(content), write a/an \_\_\_\_\_\_\_\_(report or substitute) that defines\_\_\_\_\_\_\_\_ (term or concept) and explains \_\_\_\_\_\_\_\_(content). Support your discussion with evidence from your research. |
| Teaching task: | After researching the following articles on various organisms, write a report that defines “organisms” and explains what Domain and Kingdom you would classify each organism. Support your discussion with evidence from your research. |
| Grade(s)/Level: | 7th |
| Discipline: (e.g., ELA, science, history, other?) | Science |
| Course: | Life Science |
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# Section 1: What Task?

Teaching Task

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| Background to share with students: | In this module, you will participate in investigations of organisms’ organization from basic to complex and examine these processes through a comparative study of the six kingdoms of life. |
| Teaching task: | After researching the following articles on various organisms, write a report that defines “organisms” and explains what Domain and Kingdom you would classify each organism. Support your discussion with evidence from your research. |
| Reading texts: | Articles from these sources:  http://www.opalexplorenature.org/?q=ResourcePackNews  http://www.teach-nology.com/themes/science/sorting/  http://www.nsf.gov/news/classroom/  http://class.dogonews.com/cheney  http://www.windows2universe.org/earth/Life/classification\_intro.html  http://www.khanacademy.org/ |
| Extension (optional): | N/A |

Content Standards From State or District

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| Standards source: | Georgia Performance Standards www.gadoe.org |
| Number | Content StandardS |
| S7L1 | Students will investigate the diversity of living organisms and how they can be compared scientifically. |
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COMMON CORE STATE STANDARDS

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| **READING Standards for Informational or eXpLanAtory** | |
| **“Built In” Reading Standards** | **“When Appropriate” Reading (applicable in black)** |
| 1- Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. | 3- Analyze how and why individuals, events, and ideas develop and interact over the course of a text. |
| 2- Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas. | 5- Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g. a section, chapter, scene, or stanza) relate to each other and the whole. |
| 4- Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. | 7- Integrate and evaluate content presented in diverse formats and media, including visually and quantitatively, as well as in words. |
| 6- Assess how point of view or purpose shapes the content and style of a text. | 8- Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence. |
| 10- Read and comprehend complex literary and informational texts independently and proficiently. | 9- Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take. |
| **WRITING STANDARDS FOR INFORMATIONAL OR EXPLANATORY** | |
| **“Built In” Writing Standards** | **“When Appropriate” Writing Standards (applicable in black)** |
| 2- Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content. | 1- Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. |
| 4- Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. | 3 - Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences. |
| 5- Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. | 6 - Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others. |
| 9- Draw evidence from literary or informational texts to support analysis, reflection, and research. | 7 - Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation. |
| 10- Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audience. | 8- Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism. |

Scoring Rubric for Informational or Explanatory Template Tasks

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| Scoring Elements | Not Yet | | Approaches Expectations | | | Meets Expectations | | | Advanced | |
| 1 | 1.5 | | 2 | 2.5 | | 3 | 3.5 | | 4 |
| Focus | Attempts to address prompt, but lacks focus or is off-task. |  | | Addresses prompt appropriately, but with a weak or uneven focus. |  | | Addresses prompt appropriately and maintains a clear, steady focus. |  | | Addresses all aspects of prompt appropriately and maintains a strongly developed focus. |
| Controlling Idea | Attempts to establish a controlling idea, but lacks a clear purpose. |  | | Establishes a controlling idea with a general purpose. |  | | Establishes a controlling idea with a clear purpose maintained throughout the response. |  | | Establishes a strong controlling idea with a clear purpose maintained throughout the response. |
| Reading/ Research | Attempts to present information in response to the prompt, but lacks connections or relevance to the purpose of the prompt. (L2) Does not address the credibility of sources as prompted. |  | | Presents information from reading materials relevant to the purpose of the prompt with minor lapses in accuracy or completeness. (L2) Begins to address the credibility of sources when prompted. |  | | Presents information from reading materials relevant to the prompt with accuracy and sufficient detail. (L2) Addresses the credibility of sources when prompted. |  | | Accurately presents information relevant to all parts of the prompt with effective selection of sources and details from reading materials. (L2) Addresses the credibility of sources and identifies salient sources when prompted. |
| Development | Attempts to provide details in response to the prompt, including retelling, but lacks sufficient development or relevancy. (L2) Implication is missing, irrelevant, or illogical. (L3) Gap/unanswered question is missing or irrelevant. |  | | Presents appropriate details to support the focus and controlling idea. (L2) Briefly notes a relevant implication or (L3) a relevant gap/unanswered question. |  | | Presents appropriate and sufficient details to support the focus and controlling idea. (L2) Explains relevant and plausible implications, and (L3) a relevant gap/unanswered question. |  | | Presents thorough and detailed information to strongly support the focus and controlling idea. (L2) Thoroughly discusses relevant and salient implications or consequences, and (L3) one or more significant gaps/unanswered questions. |
| Organization | Attempts to organize ideas, but lacks control of structure. |  | | Uses an appropriate organizational structure to address the specific requirements of the prompt, with some lapses in coherence or awkward use of the organizational structure |  | | Maintains an appropriate organizational structure to address the specific requirements of the prompt. |  | | Maintains an organizational structure that intentionally and effectively enhances the presentation of information as required by the specific prompt. |
| Conventions | Attempts to demonstrate standard English conventions, but lacks cohesion and control of grammar, usage, and mechanics. Sources are used without citation. |  | | Demonstrates an uneven command of standard English conventions and cohesion. Uses language and tone with some inaccurate, inappropriate, or uneven features. Inconsistently cites sources. |  | | Demonstrates a command of standard English conventions and cohesion, with few errors. Response includes language and tone appropriate to the audience, purpose, and specific requirements of the prompt. Cites sources using an appropriate format with only minor errors. |  | | Demonstrates and maintains a well-developed command of standard English conventions and cohesion, with few errors. Response includes language and tone consistently appropriate to the audience, purpose, and specific requirements of the prompt. Consistently cites sources using an appropriate format. |
| Content Understanding | Attempts to include disciplinary content in explanations, but understanding of content is weak; content is irrelevant, inappropriate, or inaccurate. |  | | Briefly notes disciplinary content relevant to the prompt; shows basic or uneven understanding of content; minor errors in explanation. |  | | Accurately presents disciplinary content relevant to the prompt with sufficient explanations that demonstrate understanding. |  | | Integrates relevant and accurate disciplinary content with thorough explanations that demonstrate in-depth understanding. |

# Section 2: What Skills?

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| Skill | Definition |
| Skills Cluster 1: Preparing for the Task | |
| *1. Task engagement* | *Ability to connect the task and new content to existing knowledge, skills, experiences, interests, and concerns.* |
| *2. Task analysis* | *Ability to understand and explain the task’s prompt and rubric.* |
| Skills Cluster 2: Reading Process | |
| *1. Text selection* | *Ability to identify appropriate texts and understand necessary reading strategies needed for the task.* |
| *2. Essential vocabulary* | *Ability to identify and master terms essential to understanding a text.* |
| *3. Note-taking* | *Ability to select important facts and passages for use in one’s own writing.* |
| Skills Cluster 3: Transition to Writing | |
| *1. Bridging* | *Ability to begin linking reading results to writing task.* |
| Skills Cluster 4: Writing Process | |
| *1. Initiation of task* | *Ability to establish a controlling idea and consolidate information relevant to task..* |
| *2. Development* | *Ability to construct an initial draft with an emerging line of thought and structure.* |
| *3. Revision* | *Ability to refine text, including line of thought, language usage, and tone as appropriate to audience and purpose.* |
| *4. Editing* | *Ability to proofread and format a piece to make it more effective.* |
| *5. Completion* | *Ability to submit final piece that meets expectations.* |

# Section 3: What Instruction?

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| Pacing | Skill and Definition | mini-tasks | | Instructional Strategies |
| Product and Prompt | Scoring (Product “meets expectations” if it…) |
| Skills Cluster 1: Preparing for the Task | | | | |
| *30-40 min.* | *1. Task engagement*  *Ability to connect the task and new content to existing knowledge, skills, experiences, interests, and concerns.* | *Product: Flip Book*  *Prompt: Using your Classification Flip Book, define the domains and kingdoms for organisms of your choice and provide examples of organisms in each group.* | *None* | * *Review each student’s response to ensure she/he understands the task. Ensure relevant reading material is selected or provided.* * *Have students share responses so that students can hear/know what each other is doing and encourage them to help each other when appropriate.* * *Discuss in detail the prompt, type of writing and structure, the product, and the rubric.* |
| *20 min.* | *2. Task analysis*  *Ability to understand and explain the task’s prompt and rubric.* | *Product: Short response*  *Prompt: In a quick write, write your first reaction to the task prompt. What strategies might you use to gain knowledge of organisms and the system of classification?* | *None* | * *Have students identify various objects as abiotic or biotic; share responses and collaborate to see what organelles they may have forgotten about or did not know.* * *Teach or review content required for the task depending on when in the sequence they teach the content – before or during the production of the task.* |
| Skills Cluster 2: Reading Process | | | | |
| *I period plus homework, if necessary* | *1. Text selection*  *Ability to identify appropriate texts and understand necessary reading strategies needed for the task.* | *Product: None*  *Prompt: Read the following articles on the various organisms http://class.dogonews.com/cheney* | *None* | * *Coach students in reading scientific articles – identifying key vocabulary, captions, and conclusions.* |
| *30 min.* | *2. Essential vocabulary*  *Ability to identify and master terms essential to understanding a text* | *Product: Vocabulary notebook entries with classification list*  *Prompt: In your notebook, identify key words or phrases as you read and define them. Add terms we identified as the “language of the discipline.” Note domains and six kingdoms (Archea, Bacteria, Eukarya) (Eubacteria, Archeabacteria, Animal, Plan, Fungi, Protist)* | *Meets: Identifies vocabulary and notes classifications correctly.*  *Writes in readable prose.*  *Not Yet: Attempts to meet the criteria for “meets.”* | * *Review classification system.* * *Use of dictionary and other sources to acquire understanding.* |
| *1 period* | *3. Note-taking*  *Ability to select important facts and passages for use in one’s own writing.* | *Product: Notes*  *Prompt: Take and organize notes from reading materials and organize elements into classification system (Domains and Kingdoms) in preparation for lab report* | *Meets: Prepares notes in with correct classification system.*  *Not Yet: Attempts to meet the criteria for “meets.”* | * *Provide students with a note taking method(s) and template.* * *Identify any gaps or unanswered questions as you do you read about your topic.* * *Teach strategies for summarizing or paraphrasing.* |
| Skills Cluster 3: Transition to Writing | | | | |
| *30 min.* | *1. Bridging*  *Ability to begin linking reading results to writing task* | *Product: Short response (with bullets) class work*  *Prompt: In a quick write, write about what you know now that you’ve read about the classification system. What strategies will you use to write your report?* | *None* | * *Review professional or other samples of writing type and structure.* * *Deconstruct professional samples of the type of writing students will engage in:*   *Demonstrate patterns of development (e.g. from most important to least important)*  *Note the difference between a claim and a controlling idea or thesis*  *Note the difference between an “explanation” and an “argument”*  *Analyze purpose and audience*  *Analyze tone and language choices*  *Evaluate effectiveness – Do you get the information and explanation you expect? Why?*   * *Discuss the prompt and what students need to do to complete the writing portion.* * *Discuss rubric – point out demands and qualities of performance. Students paraphrase rubric in their own words.* |

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| Skills Cluster 4: Writing Process | | | | |
| *homework, review in class* | *1. Initiation of task*  *Ability to establish a controlling idea and consolidate information relevant to task.* | *Product: Paragraph and outline*  *Prompt: Write a summary paragraph that includes a controlling idea and sequences the key points you plan to make in your composition.* | *Meets: Writes a concise summary statement and outline that establishes a controlling idea and identifies key points that support development of information and/or explanation.*  *Writes in readable prose.*  *Not Yet: Attempts to meet the criteria for “meets.”* | * *Show students’ summaries and abstracts or opening paragraphs from professional work.* * *Demonstrate or provide a check-list for the “ingredients” of an opening paragraph, such as author’s name, etc. and a range of approaches for establishing an informational composition.* * *Collectively write a summary demonstrating a controlling idea with key points that support the development of the explanation.* |
| *1 period and homework, if necessary* | *2. Development*  *Ability to construct an initial draft with an emerging line of thought and structure.* | *Product: Opening paragraph and first draft*  *Prompt: Redraft an opening for your composition with one or more paragraphs that establishes the controlling idea and provides a lead in for your reader. Write an initial draft to include multiple paragraphs: an opening, development of your process, an ending to include either a comment, conclusion, or implication.* | *Meets: Provides an opening to include a controlling idea and an opening strategy relevant to the prompt.*  *Provides an initial draft with all elements of the prompt addressed.*  *Writes in readable prose.*  *Not Yet: Attempts to meet the criteria for “meets.”* | * *How to open and end an informational/explanatory composition* * *Use of template for all levels to guide students through first draft* * *Student-led revision session* |
| *1 period* | *3. Revision*  *Ability to refine text, including line of thought, language usage, and tone as appropriate to audience and purpose.* | *Product: Revised drafts (2 or more)*  *Prompt: Apply revision strategies for clarity, logic, language, cohesion (students should do at least 2 drafts).* | *Meets: Demonstrates use of revision strategies that clarify logic and development of ideas; embeds relevant details; improves word-usage and phrasing; and creates smooth transitions between sentences and paragraphs.*  *Applies a text structure to organize reading material content and to explain key points related to the prompt.*  *Not Yet: Attempts to meet the criteria for “meets.”* | * *Develop ways to manage revision process so that students get feedback in timely and helpful ways.* * *Draft study (students volunteer a segment for class or small group help and discussion)* * *Peer feedback on clarity of thinking and development of claim/argument* * *Read-aloud for peer and adult feedback* * *Strategies for embedding information – citation methods, quoting, paraphrasing* |
| *30 min.* | *4. Editing*  *Ability to proofread and format a piece to make it more effective.* | *Product: Final draft*  *Prompt: Finalize draft for the readership; apply finishing touches (e.g. visuals, neatness, formatting, copy editing).* | *Meets: Demonstrates use of strategies that enhance the readability and appearance of the work for presentation.*  *Not Yet: Attempts to meet the criteria for “meets.”* | * *Use of error analysis to encourage self-correction of language usage and grammatical errors* * *Use of copy-editing mark* |
|  | *5. Completion*  *Ability to submit final piece that meets expectations* | *Product: Final Piece*  *Prompt: Turn in your complete set of drafts, plus the final version of your piece* | *Fits the “Meets Expectations” category in the rubric for the teaching task.* |  |

# Materials, references, and supports

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| For Teachers | For Students |
| “Discover Classification – free teaching resources.” *Opalexplorenature.org.* Natural History Museum, 19 Jan. 2010. Web.  <<http://www.opalexplorenature.org/?q=ResourcePackNews>>.  “Guide to Classification and Sorting.” t*each-nology.com.* Teachnology, Inc., n.d. Web.  <http://www.teach-nology.com/themes/science/sorting/>.  “Classroom Resources.” *nsf.org.* National Science Foundation, n.d. Web. <http://www.nsf.gov/news/classroom/>. | “Mrs. Cheney’s Science Class Lakeside Middle School.” d*ogonews.com.* DOGO Media, Inc., 6 Sept. 2010. Web. <http://class.dogonews.com/cheney>.  “Classification of Living Things.” *Windows2universe.org.* National Earth Science Teachers Association, 12 Nov. 2008. Web.  <http://www.windows2universe.org/earth/Life/classification\_intro.html>.  *khanacademy.org.* Khan Academy, n.d. Web. <http://www.khanacademy.org/>. |

# Section 4: What Results?

Student work samples

[Include at least two samples of student work at each scoring level.]

Classroom Assessment Task (Optional: May be used as Pre-Test or Post-Test)

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| Background to share with students (optional): | Scientists have a particular way of working that they call the “scientific method.” |
| Classroom assessment task | Prompt: After researching this short article on steps of the scientific method, write a summary that defines “science” and explains how scientists go about their work. Support your discussion with evidence from your research. |
| Reading texts: | “Steps of the Scientific Method.” s*ciencebuddies.org.* Science Buddies. n.d. Web. <http://www.sciencebuddies.org/mentoring/project\_scientific\_method.shtml>. |

Informational or Explanatory Classroom Assessment Rubric

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| **LDC Informational/Explanatory Classroom Assessment Prompt**  **MEETS EXPECTATIONS** | |
| Focus | Addresses prompt with a focused response. |
| Reading/Research | Presents and applies relevant information with general accuracy. |
| Controlling Idea | Establishes a controlling idea that states the main purpose and/or question for the tasks. L2 Addresses the credibility of sources. |
| Development | Presents sufficient information in order to examine or convey topics or issues, answer questions, solve problems; identifies salient themes or features; explains key information with sufficient detail. \*L2 Discusses relevant implications to topic. L3 Identifies a gap or unanswered question. |
| Organization | Applies a generally effective structure to address specific requirements of the prompt. |
| Conventions | Demonstrates a command of standard English conventions and cohesion; employs language and tone appropriate to audience and purpose. |
| **NOT YET** | |
| Focus | Attempts to address prompt but lacks focus or is off-task. |
| Reading/Research | Attempts to present information relevant to prompt. |
| Controlling Idea | Controlling idea is weak and does not establish a purpose and/or address a research question. |
| Development | Tends to retell rather than present information in order to answer questions, solve problems; lacks details to develop topic. \*L2 Implications are weak or not relevant to topic. L3 Does not identifies a relevant gap or unanswered question. |
| Organization | Applies an ineffective structure; composition does not address requirements of the prompt. |
| Conventions | Demonstrates a weak command of standard English conventions; lacks cohesion; language and tone are inappropriate to audience and purpose. |

# Teacher Work Section

Here are added thoughts about teaching this module.

# Appendix

The attached materials support teaching this module.

None